Fig. 2

```
┌─────────────────────────────────────────────────────┐
│ Base station recieves multiple signal components      │
│ from a number of terminals                            │
│ For each terminal:                                    │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│ Determine a number of the strongest signal            │
│ components displaced in time                          │
└─────────────────────────────────────────────────────┘
            │                              │
            ▼                              ▼
┌──────────────────────────┐    ┌──────────────────────────┐
│ Continuous or slow fade   │    │ Fast fade strongest        │
│ strongest component        │    │ component                  │
│ determination              │    │ determination algorithm    │
│ algorithm - see fig 4      │    │ - see fig 5                │
└──────────────────────────┘    └──────────────────────────┘
            │                              │
            ▼                              ▼
        ┌───────────────────────────────────────────┐
        │ Determine difference in time between        │
        │ strongest component and a reference time    │
        └───────────────────────────────────────────┘
                          │
                          ▼
        ┌───────────────────────────────────────────┐
        │ If timing difference exists, instruct terminal │
        │ to adjust its transmission timing           │
        └───────────────────────────────────────────┘
```
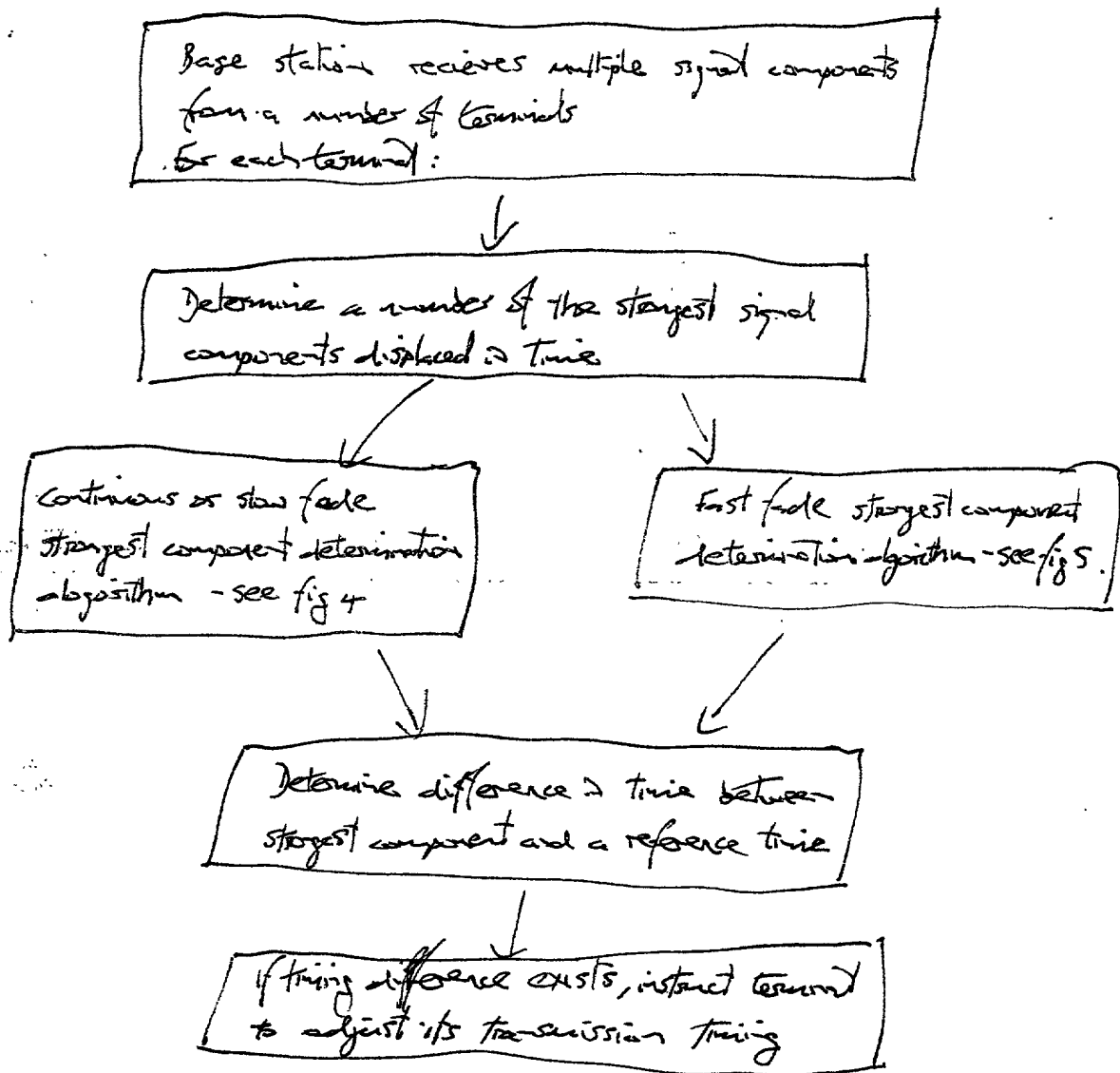
Fig 3

Fig. 4.

average signal strength of each of the strongest signal components over a predetermined interval

↓

Determine whether ~~the~~ any of the average signal strengths ~~of that currently~~ ~~exceed~~ ~~the average signal~~ synchronised signal component is exceeded by any of the other components

does the

If so, ~~for~~ the highest average signal strength exceed that of the currently synchronised component by a predet. threshold

If so, ~~if~~ is the offset is true ~~th~~ these components more than an pre-determined threshold.

If so, assign the highest ave. signal strength component as the new strongest component.

Fig 5.

Determine average signal strength of the strongest signal components over a shuttered predetermined period

↓

Determine whether the average of the current strongest component is below the combined average of the other components by a predetermined amount

↓

If so, assign the highest average signal component as the strongest component.
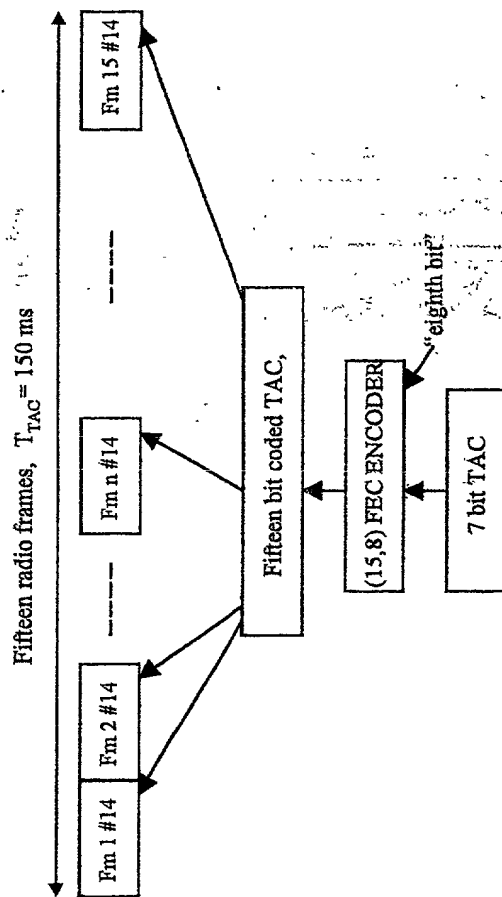
Figure
6a

Fifteen radio frames, $T_{TAC} = 150$ ms

| Fm 1 #14 | Fm 2 #14 | ----- | Fm n #14 | ----- | Fm 15 #14 |

Fifteen bit coded TAC,

(15,8) FEC ENCODER ← "eighth bit"

7 bit TAC

Figure
6b

7 bit TAC	function
0000000	do nothing
0000001	if this is the only weighted bit set -
	advance time by table entry 0 (default 1/8 chip , tracking mode)
	if this is set in combination with other weighted bits -
	advance time by table entry 1 (default 1/4 microsecond)
0000010	advance time by table entry 2 (default 1/2 microsecond)
0000100	advance time by table entry 3 (default 1 microsecond)
0001000	advance time by table entry 4 (default 2 microseconds)
0010000	advance time by table entry 5 (default 4 microseconds)
0100000	advance time by table entry 6 (default 8 microseconds)
1000000	do nothing
1000001	if this is the only weighted bit set -
	retard time by table entry 0 (default 1/8 chip , tracking mode)
	if this is set in combination with other weighted bits -
	retard time by table entry 1 (default 1/4 microsecond)
1000010	retard time by table entry 2 (default 1/2 microsecond)
1000100	retard time by table entry 3 (default 1 microsecond)
1001000	retard time by table entry 4 (default 2 microseconds)
1010000	retard time by table entry 5 (default 4 microseconds)
1100000	retard time by table entry 6 (default 8 microseconds)

Figure 6c

Fifteen radio frames, $T_{TAC} = 150$ ms

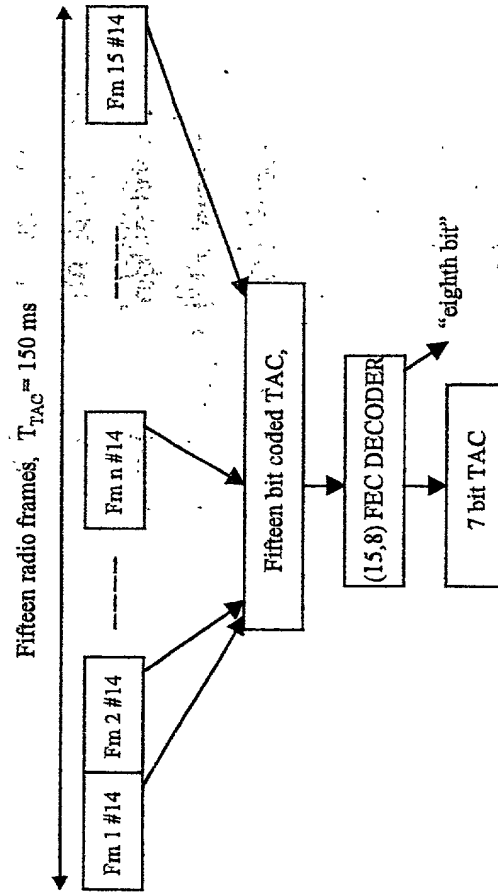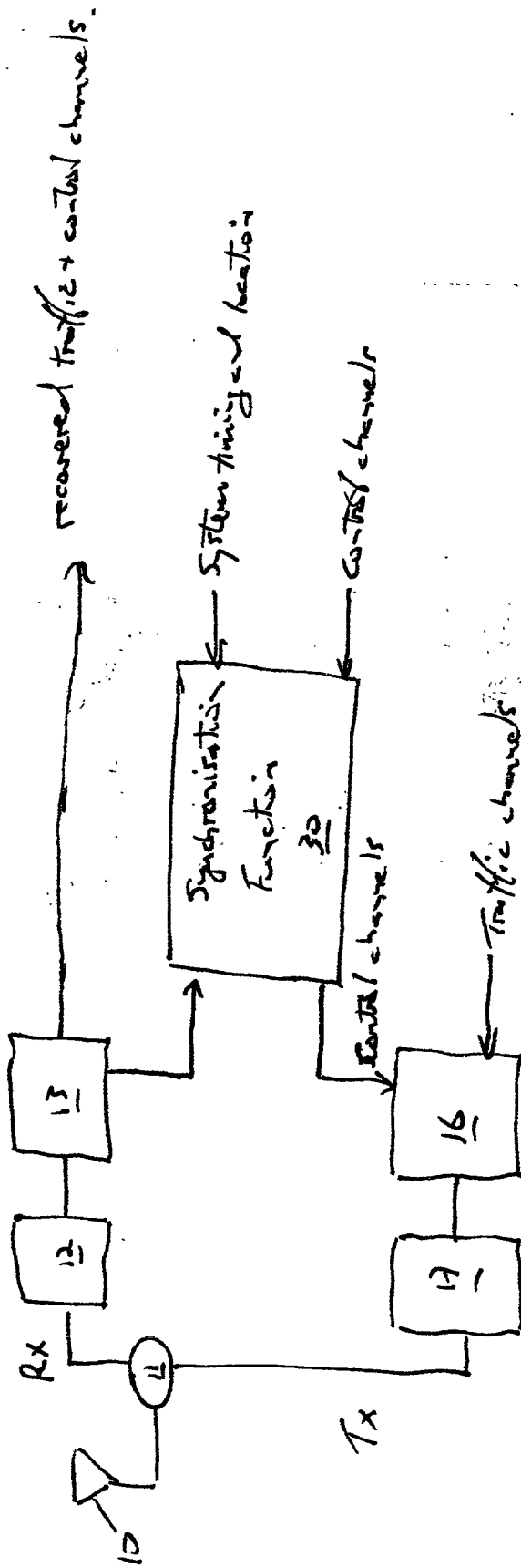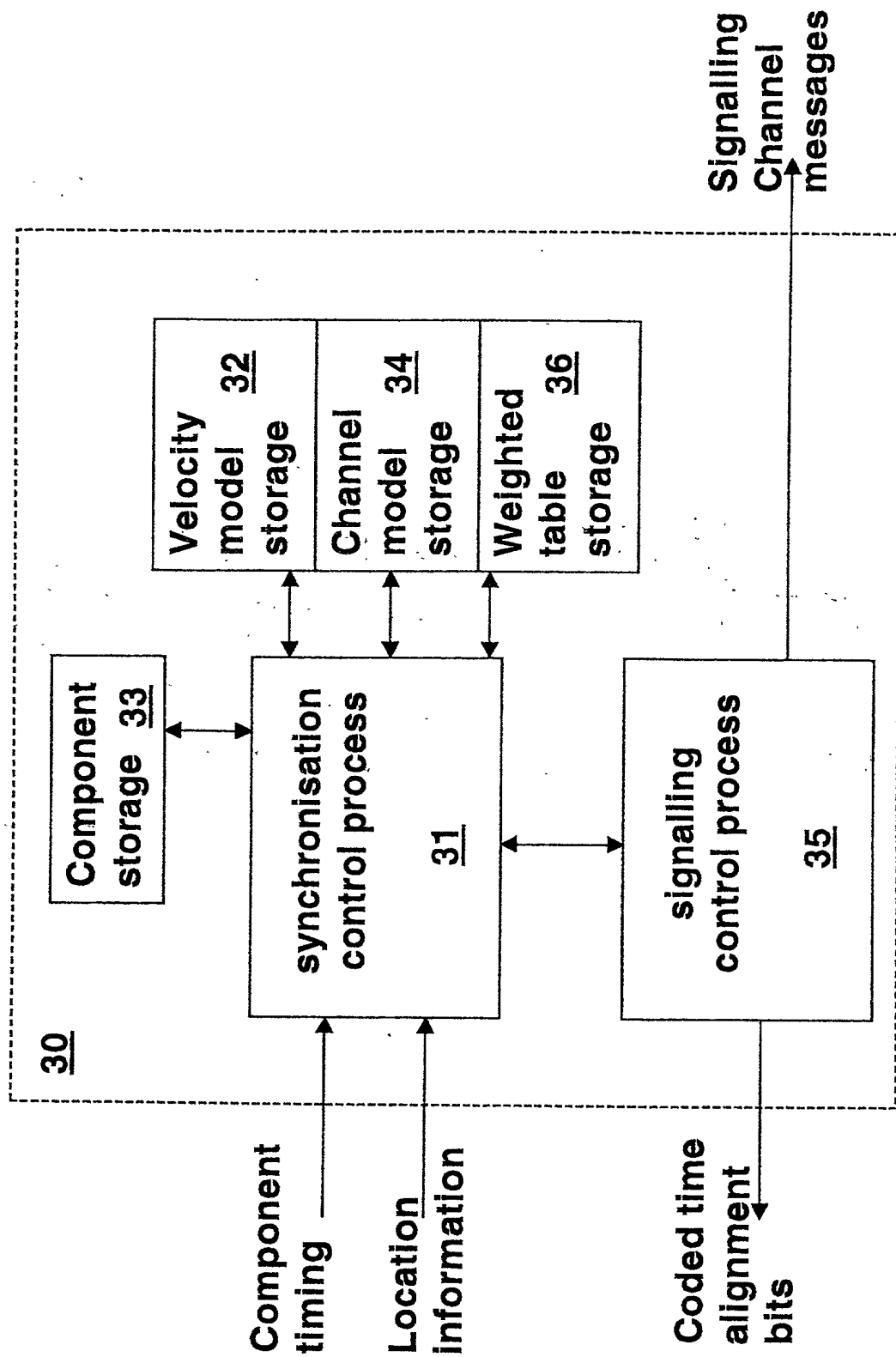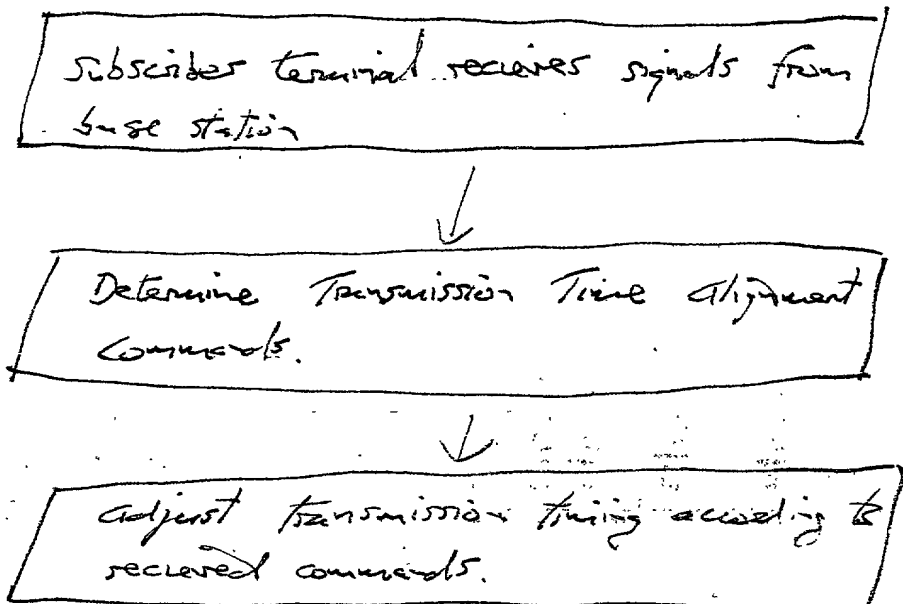| Fm 1 #14 | Fm 2 #14 | ----- | Fm n #14 | | Fm 15 #14 |

Fifteen bit coded TAC,

(15,8) FEC DECODER → "eighth bit"

7 bit TAC

Figure
6d

Fig 7

Figure 8

Fig 5.

```
┌─────────────────────────────────────────┐
│ Subscriber terminal recieves signals from │
│ base station                              │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Determine Transmission Time Alignment     │
│ Commands.                                 │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Adjust transmission timing according to   │
│ recieved commands.                        │
└─────────────────────────────────────────┘
```
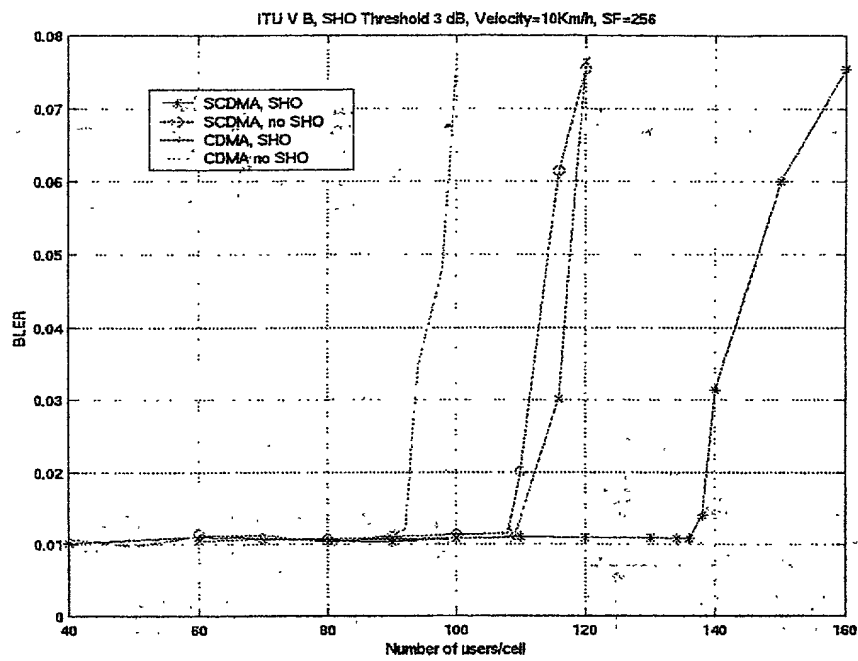
Figure 10

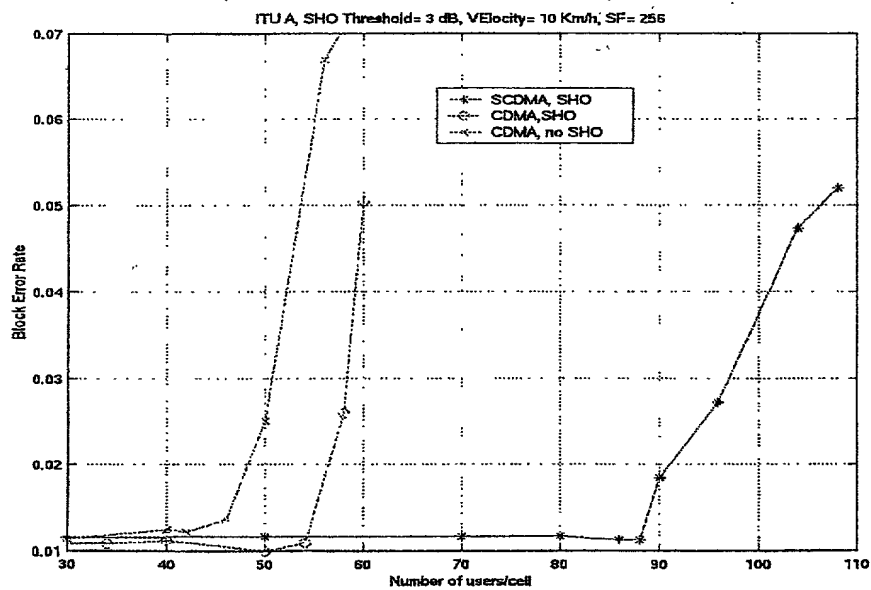Figure 11a: Channel model: ITU Vehicular Channel B, Velocity 10 Km/h, SHO threshold: 3dB

Figure 11b: Channel model: ITU Outdoor-Indoor Ch A, Velocity 10 Km/h